

23

Date: Wednesday, 5/16/2007 8:13:15 AM  
User: Kim Johnston

## Process Sheet

Customer	: CU-DAR001 Dart Helicopters Services		Drawing Name	: 02.250 SUPPORT	
Job Number	: 32373		Part Number	: D28911	
Estimate Number	: 11057		Drawing Number	: D2891 REV A1	
P.O. Number	: N/A		Project Number	: N/A	
This Issue	: 5/16/2007 S.O. No. : N/A		Drawing Revision	: A1	
Prsht Rev.	: NC		Material	: N/A	
First Issue	: N/A		Due Date	: 6/5/2007	
Previous Run	: 29108		Qty:	10 Um: Each	
Written By					
Checked & Approved By					
Comment	: Est. C 02.11.26 Added P/O KJ				

## Additional Product

Job Number:



Seq. #:	Machine Or Operation:	Description :
1.0	PG	PURCHASING
		<p>Comment: PURCHASING  Issue P/O: <u>3795</u> <u>26/05/17</u> (16)</p> <p>Description: D6104-003</p> <p>Material: 17-4 PH SS (AMS 5643 OR AISI 630) as per Dwg D6104</p> <p>Material release note required.</p> <p>Blank size makes (2) D2891-1</p>
2.0	D6104003	17-4 SS Roundbar 3.25"OD
		<p>Comment: Qty.: 1.0000 Each(s)/Unit Total : 16.0000 Each(s)  Support 2.25 dia</p>
3.0	PACKAGING 1	<p>Comment: PACKAGING RESOURCE #1  Recieve &amp; Inspect for Transit Damage  Ensure Material Release Note is attached</p> <p><u>E.P. 07/06/07</u> (6)</p>
4.0	MORI SEIKI	<p>Comment: MORI SEIKI LATHE  Turn blank for Haas as per Folio FA046</p> <p><u>J.L. / 2.8.07/06/07</u></p>
5.0	QC1	<p>Comment: INSPECT ALL DIM TO DIM SHEET</p> <p><u>J.L. / 2.8.07/06/07</u></p>

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User: Kim Johnston

## Process Sheet

Customer: CU-DAR001 Dart Helicopters Services

Drawing Name: 02.250 SUPPORT

Job Number: 32373

Part Number: D28911

Job Number:



Seq. #: Machine Or Operation:

Description :

6.0 HAAS1

HAAS CNC VERTICAL MACHINING #1



Comment: HAAS

Machine as per Folio FA046

Tumble & Deburr

J.F. 07/06/27

7.0 QC2

INSPECT PARTS AS THEY COME OFF MACHINE



Comment: INSPECT PARTS AS THEY COME OFF MACHINE

J.F. 07/06/27

8.0 QC8

SECOND CHECK



SD 07/06/27

Comment: SECOND CHECK

9.0 SPRAY PAINTING

SPRAY PAINTING



Comment: SPRAY PAINTING

-PRIME

- PAINT DELFLEET BLUE

-CLEAR DELFLEET

10.0 QC14

INSPECT SPRAY PAINT



Comment: INSPECT SPRAY PAINT

11.0 PACKAGING 1

PACKAGING RESOURCE #1



Comment: PACKAGING RESOURCE #1

Identify and Stock

Location: cross tube

en 07/07/04 63

12.0 QC21

FINAL INSPECTION/W/O RELEASE



Comment: FINAL INSPECTION/W/O RELEASE

SD 07/07/04

Job Completion



U 07/07/04

Description: Ø2.250 Support

Part Number: D2891.1

Inspection Dwg: D2891 Rev. A1

Page 1 of 1

Inspect dimensions highlighted on inspection sheet drawing D2891 Rev.A1/DSK076 Rev.A and record below:

Dim	Min	Max	Go/No Go Gauge	Recorded Actual Dimensions					By	Date
				1	2	3	4			
Lathe Section										
A	2.274	2.279		2.275	2.276	2.278	2.277			
B	3.702	3.722		3.680	3.712	3.712	3.710			
C	2.564	2.584		2.574	2.574	2.574	2.574			
D	0.718	0.738		.733	.730	.730	.730			
E	0.090	0.110		.087	.090	.090	.090			
F	2.464	2.484		2.474	2.474	2.474	2.474			
G	2.029	2.049		2.032	2.032	2.032	2.032			
H	2.964	2.984		2.974	2.974	2.974	2.974			
I	0.913	0.933		.918	.919	.919	.919			
J	0.022	0.042		.032	.032	.032	.032			
K	0.090	0.110		.099	.099	.099	.098			
L										
HAAS Section										
AA	0.188	0.193	DT8706			Ø.189"	Ø.189"			
AB	0.240	0.260				.242"	.242"			
AC	0.115	0.150				.125"	.125"			
AD	0.040	0.060				.050"	.050"			
AE	0.010	0.020				.015"	.015"			
AF	0.240	0.260				Ø.250"	Ø.250"			
AG	0.290	0.310				.305"	.305"			
AH	0.115	0.150				.125"	.125"			
AI	0.454	0.474				.456"	.462"			
AJ	2.779	2.789				2.784"	2.784"			
AK	0.240	0.260				Ø.250"	Ø.250"			
AL	1.002	1.042				.1041"	.1042"			
AM	0.053	0.073				Ø.063"	Ø.063"			
AN	0.257	0.262	DT8683			Ø.257"	Ø.257"			
AO	1.663	1.683				1.670"	1.670"			
AP	0.053	0.073				Ø.063"	Ø.063"			
AQ	0.022	0.042				Ø.022"	Ø.022"			
AR										
AS										

## Accept/Reject

Measured by:	8.6 / J.F.	07/06/07	Audited by:	SA
Date:	07/06/07		Date:	07.06.07

Rev	Date	Change	Revised by	Approved
A	07.12.12	New Issue	KIRP	

DART AEROSPACE LTD	Work Order:	32373
Description: Ø2.250 Support	Part Number:	D2891-1
Inspection Dwg: D2891 Rev. A1		Page 1 of 1

Inspect dimensions highlighted on inspection sheet drawing D2891 Rev.A1/DSK076 Rev.A and record below:

				Recorded Actual Dimensions					
Dim	Min	Max	Go/No Go Gauge	(5)	6	7	8	By	Date
<u>2.378</u> Lathe Section									
A	2.274	2.279		2.274	2.278	2.277	2.278		
B	3.702	3.722		3.710	3.710	3.710	3.713		
C	2.564	2.584		2.574	2.574	2.574	2.574		
D	0.718	0.738		.730	.730	.732	.732		
E	0.090	0.110		.090	.100	.103	.101		
F	2.464	2.484		2.474	2.474	2.474	2.474		
G	2.029	2.049		2.030	2.040	2.040	2.040		
H	2.964	2.984		2.974	2.974	2.974	2.974		
I	0.913	0.933		.922	.922	.920	.930		
J	0.022	0.042		.032	.032	.032	.032		
K	0.090	0.110		.100	.100	.099	.100		
L									
HAAS Section									
AA	0.188	0.193	DT8706						
AB	0.240	0.260							
AC	0.115	0.150							
AD	0.040	0.060							
AE	0.010	0.020							
AF	0.240	0.260							
AG	0.290	0.310							
AH	0.115	0.150							
AI	0.454	0.474							
AJ	2.779	2.789							
AK	0.240	0.260							
AL	1.002	1.042							
AM	0.053	0.073							
AN	0.257	0.262	DT8683						
AO	1.663	1.683							
AP	0.053	0.073							
AQ	0.022	0.042							
AR									
AS									
Accept/Reject									

Measured by:	/31	Audited by:
Date:	04/06/11	Date:

Rev	Date	Change	Revised by	Approved
A	02.12.12	New Issue	KJ/RF	#

DART AEROSPACE LTD	Work Order:	32373
Description: Ø2.250 Support	Part Number:	D2891-1
Inspection Dwg: D2891 Rev. A1		Page 1 of 1

Inspect dimensions highlighted on inspection sheet drawing D2891 Rev.A1/DSK076 Rev.A and record below:

				Recorded Actual Dimensions					
Dim	Min	Max	Go/No Go Gauge	9	10	18	12a	By	Date
<b>Lathe Section</b>									
A	2.274	2.279		2.275	2.278	2.278	2.278		
B	3.702	3.722		3.713	3.713	3.713	3.714		
C	2.564	2.584		2.574	2.574	2.574	2.574		
D	0.718	0.738		.728	.728	.728	.730		
E	0.090	0.110		.101	.101	.101	.101		
F	2.464	2.484		2.474	2.474	2.474	2.474		
G	2.029	2.049		2.040	2.040	2.040	2.040		
H	2.964	2.984		2.971	2.974	2.974	2.974		
I	0.913	0.933		.929	.929	.929	.929		
J	0.022	0.042		.032	.032	.032	.032		
K	0.090	0.110		.100	.100	.100	.101		
L									
<b>HAAS Section</b>									
AA	0.188	0.193	DT8706						
AB	0.240	0.260							
AC	0.115	0.150							
AD	0.040	0.060							
AE	0.010	0.020							
AF	0.240	0.260							
AG	0.290	0.310							
AH	0.115	0.150							
AI	0.454	0.474							
AJ	2.779	2.789							
AK	0.240	0.260							
AL	1.002	1.042							
AM	0.053	0.073							
AN	0.257	0.262	DT8683						
AO	1.663	1.683							
AP	0.053	0.073							
AQ	0.022	0.042							
AR									
AS									
<b>Accept/Reject</b>									

Measured by:	85	Audited by:	
Date:	07/06/07	Date:	

Rev	Date	Change	Revised by	Approved
A	02.12.12	New Issue	KJ/RF	#

DART AEROSPACE LTD	Work Order:	32373
Description: Ø2.250 Support	Part Number:	D2891-1
Inspection Dwg: D2891 Rev. A1		Page 1 of 1

Inspect dimensions highlighted on inspection sheet drawing D2891 Rev.A1/DSK076 Rev.A and record below:

				Recorded Actual Dimensions					
Dim	Min	Max	Go/No Go Gauge	13	14	150	164	By	Date
Lathe Section									
A	2.274	2.279		2.277	2.277	2.277	2.277		
B	3.702	3.722		3.706	3.710	3.710	3.710		
C	2.564	2.584		2.574	2.574	2.574	2.574		
D	0.718	0.738		.730	.730	.730	.730		
E	0.090	0.110		.101	.101	.101	.101		
F	2.464	2.484		2.474	2.474	2.474	2.474		
G	2.029	2.049		2.040	2.040	2.040	2.040		
H	2.964	2.984		2.974	2.974	2.974	2.974		
I	0.913	0.933		.925	.929	.930	.930		
J	0.022	0.042		.032	.032	.032	.032		
K	0.090	0.110		.101	.099	.084	.082		
L									
HAAS Section									
AA	0.188	0.193	DT8706						
AB	0.240	0.260							
AC	0.115	0.150							
AD	0.040	0.060							
AE	0.010	0.020							
AF	0.240	0.260							
AG	0.290	0.310							
AH	0.115	0.150							
AI	0.454	0.474							
AJ	2.779	2.789							
AK	0.240	0.260							
AL	1.002	1.042							
AM	0.053	0.073							
AN	0.257	0.262	DT8683						
AO	1.663	1.683							
AP	0.053	0.073							
AQ	0.022	0.042							
AR									
AS									
Accept/Reject									

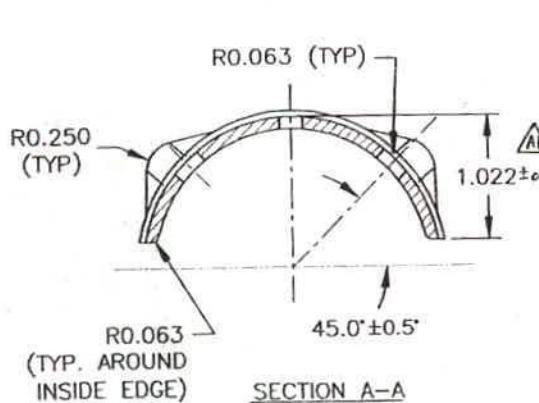
Measured by:	<i>J.S.</i>	Audited by:	
Date:	<i>07/06/07</i>	Date:	

Rev	Date	Change	Revised by	Approved
A	02.12.12	New Issue	KJ/RF	#

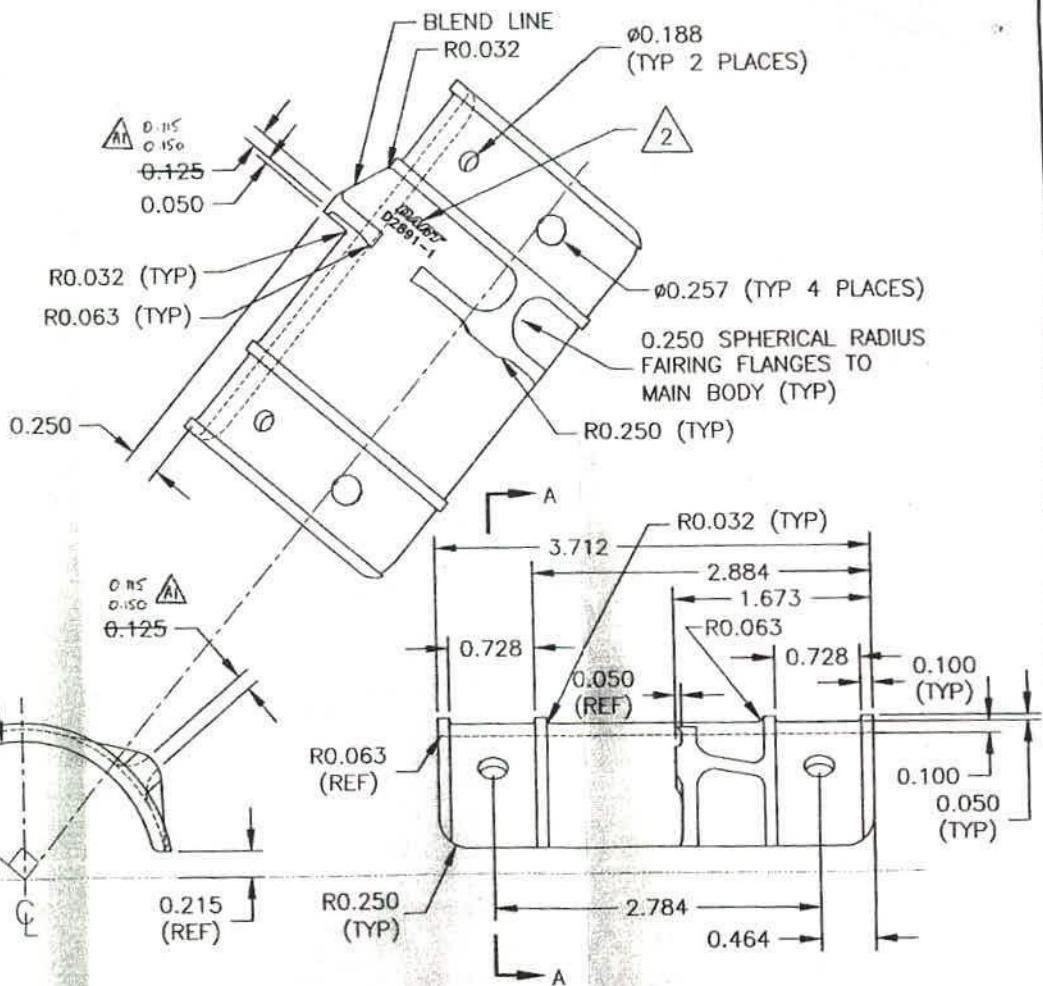
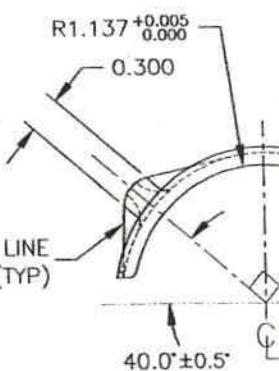
D2891-1

- 02691-

  - 1) MATERIAL: 17-4 PH STAINLESS STEEL  
HEAT TREAT TO H900 CONDITION  
(900°F FOR 1 HR, AIR COOL)  
MIN UTS = 170 KSI (38 HRc)
  - 2) IDENTIFY WITH DART LOGO (PER DART SUPPLIED GRAPHIC) AND PART NUMBER IN THIS AREA WITH 0.125 HIGH LETTERING 0.010-0.020 DEEP.
  - 3) BREAK ALL UNMARKED SHARP EDGES 0.010 TO 0.020
  - 4) PART IS SYMMETRIC ABOUT CENTERLINE
  - 5) TOLERANCES ARE PER DART QSI 018 (REF.  
 $X_{\text{XXX}} = \pm 0.010$ ) UNLESS OTHERWISE NOTED
  - 6) ALL DIMENSIONS ARE IN INCHES
  - 7) FINISH: POWDER COAT WHITE (REF. 4.3.5.2) PER DART QSI 005 4.3



SECTION A-A



A1	02.01.23		UPDATE DIMS AS MANUFACTURED
A	00.11.17		NEW ISSUE
DESIGN	DRAWN BY	<b>DART</b>	DART AEROSPACE LTD. HAWKESBURY, ONTARIO, CANADA
CHECKED	APPROVED	DRAWING NO.	REV. A
		D2891	SHEET 1 OF 1
DATE	TITLE		SCALE
00.11.17	#2.250 SUPPORT		1:1

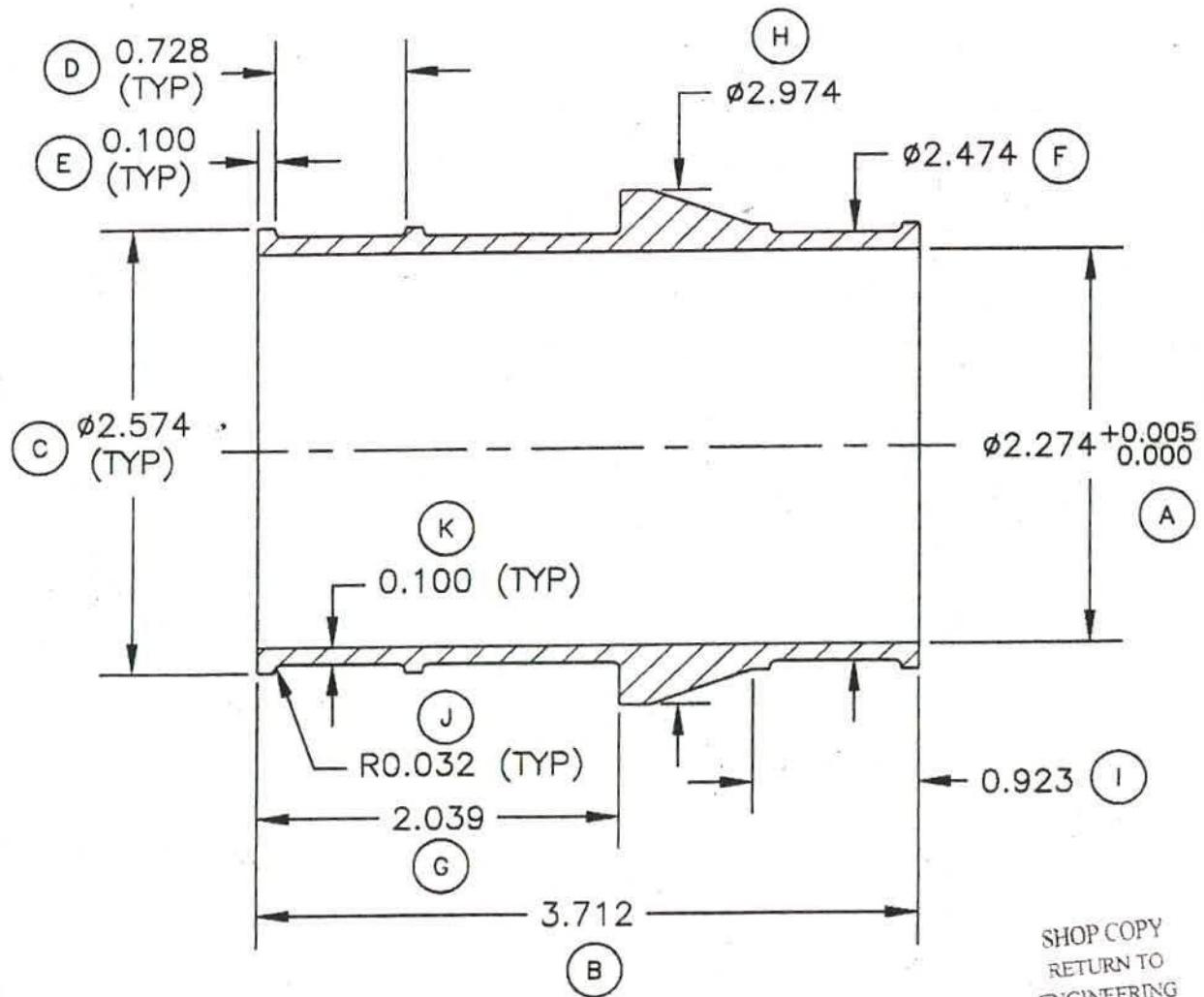
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SHOP COPY  
RETURN TO  
ENGINEERING  
UNCONTROLLED COPY  
SUBJECT TO AMENDMENT  
WITHOUT NOTICE  
WORK ORDER  
NO. 32373

**DART**

DESIGN RF	DRAWN BY RF	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
CHECKED <i>[Signature]</i>	APPROVED <i>[Signature]</i>	DRAWING NO. DSK 076	REV. A SHEET 1 OF 1
DATE 03.05.20		TITLE TURNING DETAIL FOR D2891-1	SCALE 1:1
A	03.05.20	NEW ISSUE	

**RELEASED**  
03.07.01 *[Signature]*D2891-1 TURNING DETAIL

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WITHOUT NOTICE  
WORK ORDER  
NO. *32373*

EQUISITION CLIENT-CUSTOMER REQUISITION NO.

D.W. FEVILLE &amp; CO. (Canada) Inc.

EXPÉDIÉ MAP 2007/92

EUR-PURCHASING AGENT  
IND LACELLE

A-SHIP TO:

UCTIONS/LIVRAISON-DELIVERY  
IQ-E55353

PTION - ITEM 1

2500 RD 17CR-4NI RT SOL. TREATED COND A 3.00"  
GOLDCERTIFICAT DE CONFORMITE  
See Packing Slip for English Certificate of ConformanceI. Castle & Co. (Canada) Inc. certifie que la material fourni  
près ce document rencontra et est conforme aux  
cifications du produit(s) descript(s) ci-contre.

A.M. Castle &amp; Co. (Canada) Inc.

DS POUR EXPEDITION SEULEMENT. VOIR FRACTURE  
JR. LE POID EXACT FRACTURE. SVP SIGNER ET  
TER LA COPIE DU CHAUFFEUR POUR RECEPTION DU  
MATERIAL ET, SI VERIFIÉ, CERTIFICAT D'ANALYSE.

PTION - ITEM 2

TERMES ET CONDITIONS  
**PREPAID**  
DE LA VILLE DE SAINT-ANTOINE ET  
ESTRICTION DE RESPONSABILITE  
AU VERSO

PTION - ITEM 3

S / Métaux Castle

ES DIFFÉRENCES DE COMMANDE DOIVENT ÊTRE INDICÉES  
COPIE RECUE-LIVRAISON ET LA FEVILLE D'EMBALLAGE ET  
POINT DE CHARGE. DUE MAR 1992  
306644 2

LETTRÉ MOULÉE-NAME (PRINT ONLY)

PAR-RECEIVED BY

DATE RECUE-  
DATE RECEIVEDNO. COM. CLIENT-CUST. ORD. NO.  
3795COMPTÉ-ACT. VEND-SLS TERR. EXPÉDIE PAR-SHIP VIA  
91037 200 40 CABANO (PPD)REGION LIVRAISON-DEL-ZONE F.A.B.-F.O.B.  
C/C

PREPAID

BILL NO. FEVILLE/EMBALLAGE-B/L NUMBER

ROUTE

01-NL-05/26  
31-NL-05/26VENDU A-SOLD TO:  
DART AEROSPACE LTD  
1270 ABERDEEN  
HAWKESBURY ON K6A 1K7

INSTRUCTIONS LIVRAISON (CONT.)-DELIVERY (CONT'D.)

INFORMATION CRÉDIT-CREDIT INFORMATION

Opéré par / Operated by: TRANSPORT TFI 5 SEC • NIR: RS64638-6



19048584-1

IN:

kingsway

QTE/UNITE COM-ORDERED  
32 PCS PCSPOIDS COM.-WT. ORDERED  
286BALLOTS-BUNDLES  
1 32POIDS EXP.-WT. SHIPPED  
286COULÉE INFO-HEAT INFO QTE-QTY  
G9723 ✓ WHITE 20

A18564 GOLD 11

A18289

INSTRUCTIONS (CONT'D.)

INSTRUCTIONS (CONT'D.)

POIDS EXP.-WT. SHIPPED  
42470

INSTRUCTIONS (CONT'D.)

4

ENT-WHS

32 + 3825

INSTRUCTIONS

TOL + 1/8" - 0

PRIOR DIST/ORD: 01 931733

INSTRUCTIONS

1 Box

COULÉE INFO-HEAT INFO QTE-QTY

INSTRUCTIONS (CONT'D.)

QTE/UNITE COM-ORDERED  
BALLOTS-BUNDLESPOIDS COM.-WT. ORDERED  
POIDS EXP.-WT. SHIPPED

INSTRUCTIONS (CONT'D.)

INSTRUCTIONS (CONT'D.)

ENT-WHS

INSTRUCTIONS (CONT'D.)

INSTRUCTIONS

1 Box

COULÉE INFO-HEAT INFO QTE-QTY

286 #

INSTRUCTIONS (CONT'D.)

RECEIVE-LIVRAISON DELIVERY RECEIPT

06-06-07 09:37 FROM-metaux castle

514-695-3281

T-635 P004/005 F-254

SP 425, 50-A



P.O. BOX 977  
SYRACUSE  
NEW YORK 13201

# CERTIFICATE OF TEST

				SHIP TO		SHIPPED FROM		CUST ORDER NO.	
S	O	A M CASTLE, INC		A M CASTLE, INC				PO-171126-0-1	
L	D	3400 N WOLF RD		3400 N WOLF RD				DATE	
T	O	FRANKLIN PARK, IL 60131		FRANKLIN PARK, IL 60131		11 02 2007			

CUSTOMER ORDER # & DATE	CUSTOMER REQ. #	DISTRICT	B PARSONS	SHIPPED FROM	STOCK NUMBER
01-23367					

## DESCRIPTION OF MATERIAL

CRU 17-4PH RT A IAC 42470  
 ASME-B864-04 ED 1630 ABIM-A564-04 T630  
 AHS-S6430 (EX SURFACE) ATSI 630 UNS-S17400

## SIZE

3.250 RD

HEAT NO.	CHEMICAL ANALYSIS											
	C	HN	P	S	SI	NI	CR	HO	CU	CB	Si	
A18564	.034	.68	.030	.018	.45	4.04	15.20	.11	3.13	.24	.19	

CASTLE METALS FP  
 DATE REC'D 3/9/07 IAC 42470  
 APPROVED BY: SPW

QUANTITY	HEAT NO.	MECHANICAL PROPERTIES					
1187 # A18564		TENSILE PSI	YLD. 22PSI	ELONGATION	RED/AREA%	HARDNESS	BRIN 350
		205,660	160,640	12.6	53.3	BRIN 410	

MACRO TEST OK  
 FERRITE 3 %  
 MAGNAFLUX F/S = 0/0  
 REDUCTION RATIO: 22.5:1  
 MATERIAL SOLUTION TREATED AT 1900 DEG. F. HELD 45 MINUTES AT TEMPERATURE  
 AIRCOOLED.  
 CRUCIBLE MATERIALS CORP. VENDOR #18610.  
 MATERIAL INPUT CAST.  
 HAFTA - YES

MATERIAL FREE FROM MERCURY CONTAMINATION AT TIME OF SHIPMENT  
 NO WELD REPAIR PERFORMED  
 MATERIAL MELTED IN U.S.A.

THANK YOU FOR SELECTING A QUALITY PRODUCT  
 MANUFACTURED BY THE EMPLOYEES OF CRUCIBLE SPECIALTY METALS

THE ABOVE MATERIAL WAS MANUFACTURED AND TESTED IN ACCORD  
 WITH ABOVE SPECIFICATIONS AND IS IN CONFORMANCE WITH  
 SPECIFICATION REQUIREMENTS.

CRUCIBLE MATERIALS CORPORATION  
 ACTING BY AND THROUGH ITS SPECIALTY METALS DIVISION

CERTIFIED  
BY:

QUALITY ASSURANCE REPRESENTATIVE

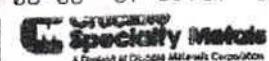
SWORN TO AND SUBSCRIBED BEFORE ME THIS

DAY OF . 20

06-06-'07 09:37 FROM-metaux castle

514-695-3281

T-635 P005/005 E-254



SYRACUSE  
NEW YORK 13201

# CERTIFICATE OF TEST

SOLD TO	SHIP TO	OUR ORDER NO.
A M CASTLE, INC 3400 N WOLF RD FRANKLIN PARK, IL 60131	A M CASTLE, INC 3400 N WOLF RD FRANKLIN PARK, IL 60131	PS-17223-6-1
CUSTOMER ORDER # & DATE	CUSTOMER REQ. #	DATE
01-23367	D-BARONG	03/14/07

## DESCRIPTION OF MATERIAL

CRU 17-4PH RT A IAC 42470  
SIZE  
3.250 RD

AMC-3174-10 REV 7 ASME-SA564-04ED T630 ASTM-A564-04 T630  
AMS-5643Q (EX SURFACE) AISI 630 UNB# B17400

## HEAT NO.

## CHEMICAL ANALYSIS

A18289	C .046	MN .50	P .027	S .021	SI .61	NI 4.17	CR 15.11	Mo .14	CU 3.38	CB .27	Ti .009
--------	--------	--------	--------	--------	--------	---------	----------	--------	---------	--------	---------

CASTLE METALS CORP.  
DATE RCVD 3-15-01  
IAC 42470  
APPROVED BY JL

## QUANTITY

## HEAT NO.

## MECHANICAL PROPERTIES

678 # A18289 TENSILE PSI YLD.2XPSI XELONG2IN RED/AREA HARDNESS  
CAPABILITY PHYSICALS AFTER 900 DEG. F. - 1 HR. AIRCOOLED  
204,770 179,850 13.9 52.6 DHN 41D

MACRO TEST OK

FERRITE 3 %

MAGNAFLUX F/S = 0/0

REDUCTION RATIO: 27.5:1

MATERIAL SOLUTION TREATED AT 1900 DEG. F. HELD 45 MINUTES AT TEMPERATURE -  
AIRCOOLED.

CRUCIBLE MATERIALS CORP. VENDOR #18610.  
MATERIAL INBOT CAST.

MATERIAL FREE FROM MERCURY CONTAMINATION AT TIME OF SHIPMENT  
NO WELD REPAIR PERFORMED  
MATERIAL MELTED IN U.S.A.

MANUFACTURED BY THE EMPLOYEES OF CRUCIBLE SPECIALTY METALS

THE ABOVE MATERIAL WAS MANUFACTURED AND TESTED IN ACCORD  
WITH ABOVE SPECIFICATIONS AND IS IN CONFORMANCE WITH THE  
SPECIFICATION REQUIREMENTS.

CRUCIBLE MATERIALS CORPORATION  
ACTING AND THROUGH ITS SPECIALTY METALS DIVISION

CERTIFIED  
BY:

QUALITY ASSURANCE REPRESENTATIVE

SWORN TO AND SUBSCRIBED BEFORE ME THIS

DAY OF \_\_\_\_\_, 20\_\_\_\_

NOTARY PUBLIC

REPORT 1. WHITE - SPECTROGRAPH EXAMINER

**CERTIFICATE OF TESTS**  
 CERT SERIAL# 000479979


Talley Metals Technology, Inc.  
P.O. Box 2498  
Harrisonville, SC 29551 Tel: 843-335-7540 Fax: 843-335-6469

**ABNAHMEPRUEFZEUGNIS****CERTIFICAT DE CONTROLE**

- \* THE RECORDING OF FALSE, FICTITIOUS OR FRAUDULENT STATEMENTS OR ENTRIES ON THIS DOCUMENT MAY BE PUNISHED AS A FELONY UNDER FEDERAL STATUTES INCLUDING FEDERAL LAW, TITLE 18, CHAPTER 47.
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- \* MATERIAL IS MANUFACTURED FREE FROM MERCURY, RADIUM, ALPHA AND GAMMA SOURCE CONTAMINATION.
- \* THIS DOCUMENT SHALL NOT BE REPRODUCED, EXCEPT IN FULL, WITHOUT THE WRITTEN CONSENT OF CARPENTER TECHNOLOGY CORPORATION.

12/10/04  
CUSTOMER/BESTELLER/CLIENT

SELLER / VERKAUFER / VENDEUR PAGE 1 OF 2

A.M. CASTLE & CO  
3400 N WOLF RD  
FRANKLIN PARK , IL 60131

HVL

CUSTOMER ORDER NO./BESTELL-NR./N° DE COMMANDE	CARPENTER NO./WERKS-NR./N° DE REFERENCE INTERNE	DATE/DATUM/DATE	WEIGHT/GEWICHT/PESO
01-28383-01	W67225	12/10/04	9153

HEAT NUMBER / SCHMELZE-NR. / N° DE COULEE : G9723

PRODUCT DESCRIPTION: TYPE 17-4 SOLUTION ANNEALED ROUGH TURNED  
PART NUMBER: IAC 42470

SPECIFICATION: CASTLE 3174-10 CAP OF COND. H900 REV. 5 (02/18/04)  
----- AMS 5643 REV Q (01/03) (UNS S17400) (AISI 630)  
----- ASTM-A564-04  
----- ASME-SA564 2001 EDITION

SIZE 3.250000 IN. ( 82.55 MM) RD BAR

PRIMARY HEAT CHEMISTRY(WT%):

C	MN	SI	P	S	CH
0.03	0.84	0.48	0.019	0.026	15.32
NI	MO	CU	N	CB	PP
4.42	0.29	3.61	0.032	0.25	0.01

CE+TA  
0.26

THIS HEAT MELTED BY THE ARC/AOD PROCESSES

NO WELD REPAIR.

MATERIAL IS MANUFACTURED FREE FROM MERCURY, RADIUM AND ALPHA SOURCE  
CONTAMINATION.

DISCS MACROETCHED AND APPROVED

HARDNESS AS SHIPPED, HB - 321 (MIDRADIUS)

MAGNETIC PARTICLE: FREQUENCY = 0 / SEVERITY = 0

MICROSTRUCTURE - FERRITE 1.60%

SOLUTION ANNEALED 1900 F - 1 HOUR - RAPID COOL  
HOT REDUCTION RATIO: 8:1  
MATERIAL WAS MELTED AND MANUFACTURED IN THE USA.

DATE REC'D 12/15/04 IAC 42470  
APPROVED BY

CONTINUED ON NEXT PAGE

This certification is made to the customer printed on this form. Carpenter neither makes, nor assumes responsibility for, any representations or certification to other parties.  
Die vorliegende Zertifikation ist nur für den Käufer gültig. Carpenter übernimmt gegenüber Dritten keinerlei Haftung für die Aussagen oder Zeugnisse, die auf diesem Dokument enthalten sind, und ist lediglich verantwortlich für eine Zertifikation vis-à-vis eines dritten Personen.

CERTIFICATE OF TESTS  
CERT SERIAL# 000479979

Talley Metals Technology, Inc.  
P.O. Box 2498  
Hawthorne, NJ 07036 Tel: 843-335-7540 Fax: 843-335-6465

## ABNAHMEPRUEFZEUGNIS

## CERTIFICAT DE CONTROLE

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12/10/04  
CUSTOMER/BESTELLER/CLIENT

SELLER/VERKÄUFER/VENDEUR PAGE 2 OF 2

A.M. CASTLE & CO  
3400 N WOLF RD  
FRANKLIN PARK , IL 60131

RVL

CUSTOMER ORDER NO./BESTELL-NR./N° DE COMMANDE	CARPENTER NO./WERKS-NR./N° DE RECHERCHE INTERNE	DATE/DATUM/DATE	WEIGHT/GEWICHT/PESO
01-28383-01	W67226	12/10/04	9153

HEAT NUMBER / SCHMELZE-NR. / N° DE COULEE : G9723  
CAPABILITY

900 F ( 482 C ), 01 HR AIR COOL

YIELD STRENGTH, (0.20 %) KSI(MPA)	192.0 { 1324 }
TENSILE STRENGTH, KSI(MPA)	202.0 { 1393 }
ELONGATION IN 2.00", %	13.0
REDUCTION OF AREA, %	46.0
HARDNESS, HB	401.0

(CONVERTED FROM TENSILE STRENGTH)

WE HEREBY CERTIFY THAT THE ABOVE TEST DATA ARE IN ACCORDANCE WITH THE PURCHASE ORDER AND SPECIFICATION REQUIREMENTS.

TIMOTHY DUVALL  
QUALITY ASSURANCE REP.  
CARPENTER TECHNOLOGY CORPORATION

*Timothy M. Knapp*

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**Chris Provencal**

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**From:** David Shepherd [dshepherd@dartaero.com]  
**Sent:** June 26, 2007 6:49 PM  
**To:** 'Chris Provencal'  
**Cc:** 'Murdoch, Jason'; 'Marc Bellavance'  
**Subject:** RE: NCR D2891-1

Chris,

I agree with your assessment of the situation.  
Parts are acceptable and the grooves should be buffed out by hand.

David

---

**From:** Chris Provencal [mailto:cprovencal@dartaero.com]  
**Sent:** Monday, June 25, 2007 11:24 AM  
**To:** '\*David Shepherd (\*David Shepherd)'  
**Cc:** 'Murdoch, Jason'; 'Marc Bellavance'  
**Subject:** NCR D2891-1

David,

Qty(4) D2891-1 Supports,

The width of one of the ridges is 0.085" instead of 0.100" (ref attached dwg). The overall length is 3.679" on one of them as well (instead of 3.712"). I don't see a problem with this myself.

On one, there are also two concentric grooves, 0.010" deep x 0.150" wide. I figure they can blend using a hand tool, and again I don't see a problem with this.

-Chris

No virus found in this incoming message.

Checked by AVG Free Edition.

Version: 7.5.476 / Virus Database: 269.9.7/868 - Release Date: 6/25/2007 12:20 PM

No virus found in this outgoing message.

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Version: 7.5.476 / Virus Database: 269.9.7/868 - Release Date: 6/25/2007 12:20 PM